Alliant Energy Response

Energy Policy Act of 2005, Section 1234
Economic Dispatch Study

Questions for Stakeholders

Section 1234 of the Energy Policy Act defines economic dispatch as "the operation of generation facilities to produce energy at the lowest cost to reliably serve customers, recognizing any operational limits of generation and transmission facilities." With that definition in mind please answer as many of the following questions as you wish, attaching supporting materials such as studies or testimony that was filed in state of federal regulatory proceeding to support you answer.

Questions

1) What are the procedures now used in your region for economic dispatch? Who is performing the dispatch (a utility, an ISO or RTO, or other) and over how large an area (geographic scope, MW load, MW generation resources, number of retail customers within the dispatch area)?

   Alliant Energy is a MISO member, please refer to MISO's response for question #1.

2) Is the Act's definition of economic dispatch (see above) appropriate? Over what geographic scale or area should economic dispatch be practiced? Besides cost and reliability, are there any other factors or considerations that should be considered in economic dispatch, and why?

   Alliant Energy believes the definition is accurate. A larger geographic scale or area certainly produces more synergies and economic benefit but can also threaten reliability by having too much generation and transmission data delivered to one central control facility. Natural disasters can cause wide spread damage to given large areas that can wreck havoc with a single point of control (ISO control room) trying to prevent a large scale system disturbance or attempting to restore the system after a partial or total system collapse. Today's technology allows the near instantaneous delivery of enormous amounts of critical data to a common control center however the capability of a fixed set of personnel in a single control room to process and react to that data is limiting factor.

   Besides cost and reliability economies of scale must be considered. Technology allows for the economical dispatch of an enormous number of generators in a given system and generally knows no physical boundaries. However, it still requires human intervention to keep generator unit limits and parameters up to date within that dispatch system and to analyze and implement corrective action to counteract system contingencies. Monitoring, analyzing and reacting to a system with hundreds of units becomes nearly impossible for a single control room when multiple system contingencies arise. The question is not so much one of how large a system can be managed under normal operations, it is more a question of how large a system can be managed under adverse conditions. It is under such adverse conditions that reliability is most threatened and the potentially significant economic consequences of a major reliability breakdown will be experienced.

As the industry continues to migrate towards central control and the pre-ISO experienced dispatchers and the infrastructure to support them is retired, future catastrophic failure of communications or other physical infrastructure will render the centralized control less than adequate and in general find system ISO operators that have no experience with local area system generator and transmission infrastructure, trying mitigate the contingency. In short, restoring the macro system from catastrophic failure is a matter of restoring a multitude of micro systems and without personnel familiar with the micro systems, the overall restoration process will be very difficult.

3) How do economic dispatch procedures differ for different classes of generation, including utility-owned versus non-utility generation? Do actual operational practices differ from the formal procedures required under tariff or federal or state rules, or from the economic dispatch definition above? If there is a difference, please indicate what the difference is, how often this occurs, and its impacts upon non-utility generation and upon retail electricity users. If you have a specific analyses or studies that document your position please provide them.

   Alliant Energy is a MISO member. Please refer to MISO's response to this question.

4) What changes in economic dispatch procedures would lead to more non-utility generator dispatch? If you think that changes are needed to current economic dispatch procedures in your area to better enable economic dispatch participation by non-utility generators, please explain the changes you recommend.

   The MISO Day-2 market model allows for non-utility generation to be offered into the market and economic dispatch mix in the same manner as utility owned generation.

5) If economic dispatch causes greater dispatch and use of non-utility generation, what effects might this have – on the grid, on the mix of energy and capacity available to retail customers, to energy prices and costs, to environmental emissions, or other impacts? How would this affect retail customers in particular states or nationwide? If you have specific analyses to support your position, please provide them to us.

   Non-utility generation, whether new or existing, that was designed to operate to provide electricity to the grid for general wholesale or retail use will not vary all that much from the operation of utility generation. Presuming all such plants are subject to the same environmental regulations as utility plants, whether or not such plants will

be dispatched is purely a matter of economics, which in an LMP market also includes the impacts of location and transmission congestion.
This is not necessarily the case where non-utility generation is constructed for "behind the meter" operation. Often changes to relay protection and metering may be necessary. In the case of this type of non-utility generation, the local transmission system is generally designed to support the loads around and within the facility, not to transport energy out of the facility to load potentially outside the local vicinity. Such transactions can contribute to transmission congestion in the local and perhaps even regional area.

Further, such "behind the meter" non-utility facilities should be required to meet the same state and local environmental standards as utilities. Typically such non-utility generation is designed to meet intermediate to peaking load rather than base load. As such, intermediate facilities would tend to be less efficient coal, gas or even oil fired. Peaking plants designed for this purpose would generally employ either oil or gas. In most cases in an economic dispatch environment, these units would only be used on near peak conditions and would not result in much, if any, contribution to lowering energy costs. To the extent such units do not meet the same environmental standards, they would have a negative environmental impact.

6) Could there be any implications for grid reliability – positive or negative – from greater use of economic dispatch? If so, how should economic dispatch be modified or enhanced to protect reliability?

One can program in as much, or as little, reliability as one chooses in any economic dispatch system. Increased reliability comes at a cost, however. Implementing mandatory and enforceable reliability rules and standards as called for in the Act could help define what level of reliability is appropriate. Having a "big picture" view of the transmission system over a broad area could help prevent reliability problems from occurring in the first place, so long as such a system was appropriately staffed. A larger, centrally controlled system may have more flexibility and a greater number of "tools" at its disposal to resolve a specific constraint or contingency. As noted above in question 2, under more extreme adverse conditions, size may become more of a handicap.

In the case of general non-utility generation and more specific "behind the meter" generation, implications to grid reliability would be site specific. Evaluation and implementation of protective relaying and transmission outlet studies would need to take place for each site. Some of these non-utility sites may be new, reliable and efficient, while others are old and, through lack of use and maintenance, may be less reliable for extended use. Further, such sites may lack sufficient manpower to run reliably over extended hours lending the units to a degradation of reliability. Conversely, well-maintained and staffed locally dispersed generation can add reliability to the system, especially during peak days.